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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,584	06/01/2001	Eric J. Gustafson	5690-121	2633

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EXAMINER
HUG, ERIC J

ART UNIT	PAPER NUMBER
1731	

DATE MAILED: 06/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/872,584	GUSTAFSON ET AL.	
	Examiner	Art Unit	
	Eric Hug	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meschenmoser et al (US 6,306,261) in view of Moore (US 5,953,230) and Eagles et al (US 6,158,576).

Meschenmoser discloses an extended nip (shoe) press for a paper web comprising a concave pressing saddle (shoe), an opposing press roll, a press felt, and a rotating endless press belt about the saddle. The press is provided with force sensors located in the saddle, or at the inside surface of the circulating continuous flexible press belt, or in the opposing press roll. The sensors are positioned to monitor and to adjust the nip pressure profile (column 2, lines 25-32; column 6, lines 14-22). Meschenmoser differs from the present invention in that the sensors are not disposed directly within the structure of the press belt. Meschenmoser also does not explicitly disclose how the signals from the sensors are processed.

Moore discloses a sensing system to measure a nip pressure profile and then use the measured profile to control the pressing operation evenly across the width of the sheet. Moore specifically discloses an attachable strip of sensors that may be placed on a press roll or

alternatively on a press felt or web. By directly placing sensors within the nip, an accurate press nip profile can be obtained. The electronics for processing sensor signals include a multiplexer and a transmitter attached to the ends of a press roll, and an external signal conditioner which receives and processes the transmitted signal. Conditioned signals are then sent to a computer for further processing and data output. The teachings of Moore are applicable to the shoe press of Meschenmoser, however Moore also does not disclose incorporating sensors directly within the structure of a press belt.

Eagles teaches incorporating sensors into the structure of a processing belt. Eagles discloses an endless belt or fabric for use with a process control unit, whereby the belt is provided with sensors which are excited by an external energy source. Suitable types of endless belts include paper making belts such as shoe press belts (column 1, line 23). The sensors take the form of a filament, film, or coating incorporated on or in the belt. Upon excitation, the sensors emits radiation detectable by a detector, the amount and wavelength of radiation being indicative of the operation of the belt (e.g., position, wear, speed), operating conditions under which the belt is running (e.g., temperature, pH), or sheet conditions (e.g., shrinkage, defects, web breaks). The detected radiation is linked to a process control circuit whereby operational parameters are controlled based on measured radiation properties. Filamentary sensors can be incorporated into the belts by means such as weaving (see Figures 1, 3, 4, 5). The sensors can also be incorporated into matrix material of the belt or as a coating on the surface. The sensors may be placed in the machine direction, cross-machine direction, or in any selected direction or pattern depending on the type of information desired.

Therefore, at the time of the invention, it would have been obvious to one skilled in the art to dispose press nip sensors within the structure of the shoe press belt as taught by Eagles to obtain a direct measurement of a press nip pressure in the shoe press of Meschenmoser. It would also have been obvious to dispose sensors in a strip-wise arrangement as taught by Moore to obtain a press nip pressure profile. It would also have been obvious to process the signals accordingly as taught by Moore so that the measured signals could be used to control the nip pressure across the width of the web.

With respect to the claims:

Claims 1-4 and 8: A convex pressing surface (roll), a shoe complimentary to the roll pressing surface, head plates on the axial ends of the roll, a cylindrical belt are all prior art elements of a shoe press. The features of an embedded communications cable (embedded sensor) within the belt configured to generate signals responsive to the operation of the shoe press and in communication with a processing unit are all described above.

Claims 5-7: These elements are prior art features of a shoe press belt as disclosed by Applicant.

Claim 9: Eagles and Moore both teach using optical fibers as sensors.

Claim 10: Eagles teaches disposing the sensors in any pattern and in any direction. A helical construction would be an obvious arrangement as it provides a time-continuous profile measurement.

Claims 11-13: These elements pertaining to the sensors and the processing unit are described above. Moore discloses that the electronics for processing and transmitting sensor signals are attached to the ends of a press roll. An external signal conditioner receives and

processes the transmitted signal. Conditioned signals are then sent to a computer for further processing and data output.

Claim 14: Meschenmoser and Moore both teach that the sensors are responsive to the nip pressure acting on them.

Claim 15: The elements of the shoe press belt construction, namely the polymeric layers and a fabric layer sandwiched between polymeric layers, are disclosed by Applicant as prior art features. The features of a communications cable extended within the belt (embedded sensor) and configured to detect an operation parameter of the press nip are all described above.

Claims 16-20, 29: The elements are regarding prior art features of a shoe press belt.

Claims 21, 22: Eagles teaches that the sensors are part of the woven fabric layer, and thus are also embedded in the outer polymeric layers.

Claims 23-25: Eagles teaches disposing the sensors in any pattern and in any direction, including machine direction (circumferentially) or cross-machine direction (axially). A helical construction would also be an obvious arrangement as it provides a time-continuous profile measurement.

Claim 26: Eagles and Moore both teach using optical fibers as sensors.

Claim 27: Meschenmoser and Moore both teach that the sensors are responsive to the nip pressure acting on them.

Claim 28: Moore teaches spacing the sensors equidistantly to obtain the profile.

Claim 30: Eagles teaches using any number of sensors. Moore teaches utilizing a strip comprising any number of sensors (and shows at least 10 sensors in the figures).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Danahy et al (US 4,087,320) discloses an apparatus for cleaning a porous belt in a papermachine, whereby the belt has a signal element attached therein for determining a revolution of the belt, and the sensed signal from the signal element is linked to a control device operative to a cleaning shower element.

Steiner et al (US 4,555,305) discloses an extended nip press having a number of sensors disposed about the press belt for determining the temperature of the belt and pressing surface during operation.

Goss et al (US 6,341,522) discloses a sensor array embedded in a paper making roll for determining the properties of a traveling web.

Shakespeare (US 6,441,904) discloses a roll for measuring the properties of a traveling paper web, whereby the roll has a plurality of sensors disposed in a pattern on its surface.

Schlueter, Jr. et al (US 6,461,701). Schlueter discloses an endless flexible belt for an electrophotographic machine, whereby the belt comprises embedded sensors for indicating motion and position of the belt. The belt is made by the pultrusion method.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Hug whose telephone number is 703 308-1980. The examiner can normally be reached on Monday through Friday, 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 703 308-1164. The fax phone numbers for the organization where this application or proceeding is assigned are 703 305-7718 for regular communications and 703 305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-0651.

jeh
May 26, 2003

PETER CHIN
PRIMARY EXAMINER